

## CLAIMS

What is claimed is:

- 5           1. A method for monitoring the status of a network, comprising:  
          computing a plurality of measures of network health, including a sum of unrouted  
          permanent virtual circuits, a sum of permanent virtual circuits whose cost exceeds a prescribed  
          multiple of an optimal route cost, and a sum of permanent virtual circuits off an optimal path;  
          and  
10           comparing said measures of network health to a threshold value and selecting a  
          restoration route from a plurality of stored restoration routes.
2. The method for monitoring the status of a network of claim 1, which further  
          comprises:  
15           restoring circuits at a rate parameterized by a value P and observing the behavior of the  
          network; and  
          increasing the value P in the network to decrease the time customers experience unrouted  
          traffic.
- 20           3. The method for monitoring the status of a network of claim 1, which further  
          comprises:  
          monitoring said measures to sense when bandwidth needs to be added to the network.
4. The method for monitoring the status of a network of claim 1, which further  
25           comprises:  
          derating each edge of the network to have capacity of a predetermined fraction of real  
          capacity;  
          computing said plurality of measures of network health to identify unrouted, off optimal,  
          and seriously misrouted traffic;  
30           determining if the measures are over a specified value and if so, then adding capacity to  
          the network.

5. A system for monitoring the status of a network, comprising:

a database storing possible restoration routes;

a computer for computing a plurality of measures of network health, including a sum of

5 unrouted permanent virtual circuits, a sum of permanent virtual circuits whose cost exceeds a prescribed multiple of an optimal route cost, and a sum of permanent virtual circuits off an optimal path; and

said computer comparing said measures of network health to a threshold value and selecting a restoration route from said database storing restoration routes.

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6. The system for monitoring the status of a network of claim 5, which further comprises: means for restoring circuits at a rate parameterized by a value P and observing the behavior of the network; and

15 means for increasing the value P in the network to decrease the time customers experience unrouted traffic.

7. The system for monitoring the status of a network of claim 5, which further comprises: means for monitoring said measures to sense when bandwidth needs to be added to the network.

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8. The system for monitoring the status of a network of claim 5, which further comprises: means for derating each edge of the network to have capacity of a predetermined fraction of real capacity;

25 said computer computing said plurality of measures of network health to identify unrouted, off optimal, and seriously misrouted traffic;

means for determining if the measures are over a specified value and if so, then adding capacity to the network.